

STATE

OF

TENNESSEE

March 1, 2006

SPECIAL PROVISION

REGARDING

EMERGENCY-ACCESS BARRIER GATE

GENERAL

This work is to furnish and install a telescoping gate in the median barrier for infrequent use by emergency responders. The gate is to be a crashworthy longitudinal barrier which opens to provide a 42 ft. wide opening for controlled access.

The gate profile should not exceed 30 in. wide by 43 in. tall. The weight of the gate should not exceed 40,000 lb.

DESCRIPTION OF SYSTEM

The gate is to be constructed of two movable steel gate assemblies which join at the center of an opening in concrete median barrier to form a continuous longitudinal barrier. The two gate half assemblies must lock together at the center of the installation with a simple connection.

The sides of the gate assemblies should be constructed of three-beam panel and lower skirt sections and have sufficient tensile strength to resist design-speed vehicle impacts.

Exterior and most interior steel surfaces are to be fabricated of corrosion resistant steel per ASTM A-123.

The outermost ends of the gate assemblies are to be equipped with transition sections that attach to custom concrete median barrier (CMB) wall assemblies. The gate half assemblies are to be secured by the wall assemblies in tension, yet must slide freely when the gate is opened. The wall assemblies are to have the New Jersey safety shape profile from the 1989 AASHTO Roadside Design Guide, figure 6.7. The top of the CMB should be 8 in. wide.

Each wall assembly is to consist of a steel enclosure assembly and concrete median barrier sections made to serve as anchor sections for the gate. The steel enclosure assembly is to be rigidly attached to the median barrier.

The barrier gate is to be attached to the bridge deck with 3/4 in. dia. x 10 in. polyester grouted ASTM A193 B7 galvanized threaded steel rods.

The gate is to allow both manual and electric-power operation. The incoming power supply will be 240 VAC single phase 50A. A security system is to prevent unauthorized activation. The manually operated system must be included with the electrically powered model as a means of operating the gate in the event of loss of electrical power.

TEST CRITERIA

The gate must meet the recommended structural adequacy, occupant risk, and vehicle trajectory criteria set forth in the National Cooperative Highway Research Program Report 350 for Test Level 3 for Longitudinal Barriers (NCHRP 350, TL 3, for impact conditions of 1808 lb to 4409 lb vehicles at speeds to 62.2 mph [100 km/h] and angles up to 25 degrees when properly installed according to the manufacturer's recommendations). A copy of the successful test report from a recognized testing facility must be supplied to the Engineer.

For TL-3 impacts, detached debris should not show potential for penetrating the vehicle occupant compartment or present a hazard to other traffic, pedestrians or workers in a workzone. The vehicle should remain upright during and after the collision. Moderate roll, pitching, and yawing may occur.

The gate should be fully operational after minor impacts and must remain a positive physical and visual barrier before and after design speed impacts. The gate should be resistant to jamming from -22 to 122 degrees Fahrenheit.

The time to completely power open or close the electrically powered gate should not exceed two minutes.

DESIGN CRITERIA

Design and placement of the gate are to conform to the applicable guidelines in:

1. U.S. Department of Transportation. Federal Highway Administration. "Manual on Uniform Traffic Control Devices" Washington, D.C. U.S. Government Printing Office, 1988.
2. American Association of State Highway and Transportation Officials. "Roadside Design Guide" Washington, D.C.: AASHTO, 1989.

The installation of the gate must be accomplished in accordance with the recommendations of the manufacturer.

TRAINING

Four training sessions are to be conducted regarding the operation and maintenance of the Emergency Access Barrier Gate. Two sessions are to be scheduled for TDOT maintenance personnel regarding the operations, maintenance, recommended testing and troubleshooting. Two sessions in operations are to be conducted for emergency responders. TDOT TMC and HELP System personnel and Memphis Fire Department, Memphis Police Department, Tennessee Highway Patrol and Arkansas Highway Police personnel will be invited. The training is to be conducted after the Emergency Access Barrier Gate is fully installed and operational and while the lane closures for Traffic Control Stage 2A or Stage 2B is in place.